REMARKS

INTRODUCTION:

In accordance with the foregoing, claims 1 and 5 – 12 have been amended. No new matter is being presented, and approval and entry are respectfully requested. Claims 1 – 12 are pending and under consideration. Reconsideration is respectfully requested.

ENTRY OF RESPONSE UNDER 37 C.F.R. §1.116:

Applicants request entry of this Rule 116 Response and Request for Reconsideration because:

(a) it is believed that the amendments of claims 8 – 9 and 11 – 12 puts these claims into the condition suggested by the Examiner;

(b) the amendments were not earlier presented because the Applicant(s) believed in good faith that the cited prior art did not disclose the present invention as previously claimed;

(c) the amendment of claim 5, to correct a typographical error, and the further amendments of claims 1 and 5 – 12 should not entail any further search by the Examiner since no new features are being added or no new issues are being raised;

(d) the amendments do not significantly alter the scope of the claims and place the application at least into a better form for appeal. No new features or new issues are being raised; and/or

The Manual of Patent Examining Procedures sets forth in §714.12 that "[a]ny amendment that would place the case either in condition for allowance or in better form for appeal may be entered." (Underlining added for emphasis) Moreover, §714.13 sets forth that "[t]he Proposed Amendment should be given sufficient consideration to determine whether the claims are in condition for allowance and/or whether the issues on appeal are simplified." The Manual of Patent Examining Procedures further articulates that the reason for any non-entry should be explained expressly in the Advisory Action.

CLAIM AMENDMENTS:

The claim amendments do not introduce new matter and do not narrow the scope of the claims. Claim 5 is amended to correct a simple typographical error and to more succinctly state the subject matter the Applicant believes is patentable. Claims 8 – 9 and 10 – 11 are amended

to incorporate the suggestions of the Examiner. Claims 1 and 6 – 12 are further amended to more succinctly state the subject matter the Applicant believes is patentable.

REJECTION UNDER 35 U.S.C. §101:

In the Office Action, at pages 2 – 3, numbered paragraphs 5 – 8, claims 8 – 9 and 11 – 12 were rejected under 35 U.S.C. §101 as being directed towards unpatentable subject matter. This rejection is traversed and reconsideration is requested.

Claims 8 – 9 and 11 – 12 have been amended in accordance with the Examiner's suggestions in the Office Action at page 3 and are directed towards patentable subject matter. Therefore, it is respectfully requested that the rejection be withdrawn.

REJECTION UNDER 35 U.S.C. §102:

In the Office Action, at pages 3 – 5, numbered paragraphs 9 – 11, claim 11 is rejected under 35 U.S.C. §102 in view of DAVID CHENG, FIELD AND WAVE ELECTROMAGNETICS 632 – 634 (Barbara Rifkind ed., Addison–Wesley 1989) (hereinafter "Cheng"). This rejection is traversed and reconsideration is requested.

Claim 11 is patentably distinguishable over Cheng. Claim 11 recites:

> A method of simulating a received characteristic of any object receiving a radio wave from a radio wave source using a computer, comprising: calculating current values of the source; storing the current values as constants; calculating current values of the object using the constants; and outputting the receiving characteristic of the object on an output device.

In contrast, the Cheng reference teaches the determination of "the directional pattern of an antenna for reception". (Cheng Page 634) The Cheng reference disclosure does not apply to any object but only to one particular type of object, antennas. In contrast, the present invention simulates the receiving characteristic of any object as indicated in the Specification, in agreement with the recitation in claim 11: "an analysis model can also be generated using an arbitrary object instead of the car." (Specification Page 23 Lines 4 – 6)

The Cheng reference also does not teach the "storing the current values as constants" as set forth in claim 11. The Cheng reference discloses the computation of antenna current using impedance coefficients and the current of the transmitter. The Examiner argued on page 4 of the Office Action that the Cheng reference on page 634, equation 11-104 teaches storing

the current values as constants. Equation 11-104 of the Cheng reference discloses the computation of the antenna current (I_2) based upon impedance coefficients (Z_{21}, Z_{22}, Z_L) and the transmitter current (I_1). Given the intrinsic property nature of the impedance coefficients, the impedance coefficients are constant values, and the transmitter current must represent a variable. Therefore, if the implication argued by the Examiner is correct, that "Cheng appears to teach storing the current values as constants" (Office Action Page 4), then the antenna current is also a constant value. If the antenna current is a constant value, then there is no need to calculate the antenna current repeatedly. Furthermore, the Cheng reference does not teach or suggest the "outputting the receiving characteristic of the object on an output device."

In addition to the Cheng reference's failure to teach the "storing the current values as constants", this element is non-obvious in view of the Cheng reference. The Cheng reference does not teach the separation of the wave generation source and the object simultaneous moment equations. The Cheng reference teaches an alternate method for calculation of the current in the wave generation source and the current in the object. In contrast, the present invention is directed towards the use of the moment method to calculate the current in the wave generation source and the object. The present invention, because of the recited constant storage, provides for the negating of interaction between the wave generation source and the object; thereby, the calculation process load for the receiving characteristic of the object is reduced significantly because the interaction between the object and wave generation source can be ignored. Furthermore, the Cheng reference does not contemplate the computational issues dealt with by the present invention since the Cheng reference does not envision the use of the moment method. Therefore, the "storing of current values as constants" is non-obvious in view of Cheng. Therefore, it is respectfully submitted that claim 11 is patentably distinguishable over the prior art.

REJECTION UNDER 35 U.S.C. §103:

In the Office Action, at pages 5 – 63, numbered paragraph 13 – 22, claims 1 – 10 were rejected under 35 U.S.C. §103 over Nishino et al. U.S. Patent No. 4,405,829 (hereinafter "Nishino") in view of one or more of Otsu et al. U.S. Patent No. 5,903,477 (hereinafter "Otsu"), DAVID C. LAY, LINEAR ALGEBRA AND ITS APPLICATIONS 133 – 142 (Laurie Rosatone ed., Addison–Wesley 1996) (hereinafter "Lay"), DAVID CHENG, FIELD AND WAVE ELECTROMAGNETICS 632 – 634 (Barbara Rifkind ed., Addison–Wesley 1989) (hereinafter "Cheng"), Edmund K. Miller, *A Selective Survey of Computational Electromagnetics*, 36 IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION 1281 (1988) (hereinafter "Miller"), and Nagase et al. U.S. Patent No. 5,812,434

(hereinafter "Nagase"). The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

The Prior Art Does Not Teach or Suggest a Current Storage Device Storing the Current Values of the Generation Source

The present invention discloses a "current storage device storing the current values of the generation source" as set forth in claim 1, "current storage device storing the current values of the transmitting antenna" as set forth in claim 5, "storing the current values of the generation source" as set forth in claims 7 and 8, "preserving the current values of the generation source" as set forth in claim 9, and a "current storage means for storing the current values of the generation source" as set forth in claim 10. In the Examiner's 35 U.S.C §103 rejection of claims 1, 5, 7 – 10, the Examiner relied on the Nishino reference to teach these features of the present invention. Throughout the Office Action, the Examiner states that Nishino teaches the storing of the currents in a current storage device by drawing the implied teaching from Nishino FIG. 5. The Examiner reasons that the current values of element ST5 for the wave source are stored since element ST7 uses the same current values. Nishino does not suggest or teach this implication. Nishino teaches the contemporaneous use of the variable representing current value of the wave source. No current value storage is taught because none is needed; the variable current values are transferred contemporaneously to the second calculation unit 13 upon their measurement. (Nishino FIGS. 4, 5) This opposite implication is more logically drawn from the Nishino reference given the parallel position of second calculation unit 13 and the first calculation unit 12, which calculate the object current and wave source current respectively. The parallel position of these items in FIGS. 4 and 5 implies the contemporaneous use of the variable wave source current and not the storage the Examiner argues.

Furthermore, FIG. 5 of the Nishino reference discloses two data storage devices as elements 20 and 21. Nishino does not teach the storage of the wave source current values in these storage devices. If the current values calculated in ST5 were being stored in a storage device, then the Nishino reference would logically have shown that in FIG. 5 or expressly stated that in the Specification. (Nishino FIG. 4 Elements 12, 13) Similarly to FIG. 5, Nishino FIG. 4 also fails to include the implication asserted by the Examiner. Lastly, the Nishino reference fails to indicate the storage of the current values in the Specification: "the induced-wavesource calculation unit 131 calculates the wavesource induced by the current distribution to the inapplicable section in accordance with the matrix calculation for the current distribution calculated by the first calculation unit 12 and for the second mutual impedance calculated by the

mutual impedance calculation unit 130." (Nishino Col.6 Lines 56 – 63) The only implication that can be logically drawn from the Nishino reference's failure to expressly indicate this feature is that Nishino does not teach or suggest this feature.

In contrast, the present application, in agreement with the recitation of claims 1, 5, 7 – 10, expressly states that the current of the wave source is calculated by the first calculation device 21 and then stored in a current storage device as a constant. That is, to simplify the problem, the present invention treats the current values as constants, as previously discussed. (Specification FIGS. 2A, 6) The present application expressly states:

> [t]he current calculation device 21 calculates the current values of the wave source using the simultaneous equations of the wave source, which have currents that flow through respective elements as unknowns when the wave source is divided into a plurality of elements. The current storage device 23 stores the current values of the wave source.
>
> (Specification Page 8 Lines 12 – 18)

Therefore, it is respectfully submitted that claims 1, 5, 7, 8, 9, 10 are patentably distinguishable over the prior art.

Dependents of Claim 1

Claims 2 – 4 depend from claim 1 and include all the features of claim 1 plus additional features not taught or suggested by the prior art. For example, none of the cited references teach: "a matrix storage device storing matrix data of mutual impedance between elements of the object" as set forth in claim 2; "generates simultaneous equations of the object corresponding to the new position using the matrix data stored in the matrix storage device as a coefficient matrix and calculates new current values" as set forth in claim 2; "said matrix storage device stores matrix data of a factorized coefficient matrix" as set forth in claim 3; "a judging device judging whether a calculation method in which the current values of the generation source are regarded as constants can be used" as set forth in claim 4. Therefore, it is submitted that claims 2 – 4 are patentably distinguishable over the prior art.

The Prior Art Does Not Teach or Suggest Wherein Simultaneous Equations of the Radio Wave Generation Source... Are Separately Calculated

The present invention discloses the simultaneous equations of the radio wave generation source and the simultaneous equations of the receiving characteristic of the object are separated by regarding the current values of the radio wave generation source as constants, and the current values of the radio wave generation source and the current values of the

receiving characteristic of the object are separately calculated. In the Examiner's 35 U.S.C §103 rejection of claims 1, 5 – 10, the Examiner relied on the Cheng reference to teach this feature of the present invention. Inherent within the claims is that the separately calculated simultaneous equations of the radio wave generation source and the simultaneous equations of the receiving characteristic of the object are based on the moment method. The Cheng reference does not teach the separation of the wave generation source and the object simultaneous moment equations. The Cheng reference teaches an alternate method for calculation of the current in the wave generation source and the current in the object. In contrast, the present invention is directed towards the use of the moment method to calculate the current in the wave generation source and the object. The present invention discloses the negating of interaction between the wave generation source and the object; thereby, the calculation process load for the simulation of the receiving characteristic is reduced significantly because the interaction between the object and wave generation source can be ignored. Furthermore, the Cheng reference does not contemplate the computational problem raised by the present invention since the Cheng reference does not envision the use of the moment method.

In addition to the Cheng reference's failure to teach or suggest this feature, this feature of the present invention is not obvious in view of the prior art. The present invention discloses the use of moment method in conjunction with the separated simultaneous equations of the radio wave generation source and the simultaneous equations of the receiving characteristic of the object. The prior art repeatedly cites the problematic computational load that is incurred when the moment method is used. (Otsu Col. 5 Lines 64 – 65, Nishino Col. 5 Lines 43 – 46) The Nishino reference cites the same problem solved by the present invention and discloses solving it in a wholly different way, suggesting a combination of the fast distributed constant circuit method and the slow and accurate moment method. (Nishino Col. 5) The prior art solves the same problem differently than the present invention; consequently, the feature of the present invention is non-obvious. Therefore, it is respectfully submitted that claims 1, 5 – 10 are patentably distinguishable over the prior art.

The Prior Art Does Not Teach or Suggest a Matrix Storage Device Storing Matrix Data of Mutual Impedance

The present invention recites: "a matrix storage device storing matrix data of mutual impedance between elements of the object" as set forth in claim 2, "said matrix storage device stores matrix data of a factorized coefficient matrix" as set forth in claim 3, and "a matrix storage device storing matrix data of mutual impedance between elements of the object when the object is divided into a plurality of elements" as set forth in claim 5. In the Examiner's 35 U.S.C §103

rejection of claim 2, 3, and 5, the Examiner relied on the Nishino reference to teach this feature of the present invention.

Nishino does not teach these elements related to the storage of certain data. The Nishino reference teaches two discrete storage devices. (Nishino FIG. 5 Elements 20, 21) The Nishino reference teaches the storage of only structural information and result of the calculation of the intensity of electromagnetic field. The Nishino reference does not suggest or teach the storage of any information to enable subsequent computation. The Nishino reference teaches the contemporaneous use of the calculated current of the wave source in solving the current of the inapplicable areas. (Nishino Col. 6 Lines 56 – 63 and FIG. 5) In contrast, the present invention is directed towards the use of storage devices to store differing types of data such as the data of mutual impedance between elements of the object. Therefore, it is respectfully submitted that claims 2, 3, and 5 are patentably distinguishable over the prior art.

The Prior Art Does Not Teach or Suggest an Mutual Impedance Storage Device

The present invention in claim 6 recites:

> an impedance storage device storing both data of mutual impedance between elements of the generation source when the generation source is divided into a plurality of elements and data of mutual impedance between elements of the object when the object is divided into a plurality of elements as data independent from a position of the generation source[.]

In the Examiner's 35 U.S.C §103 rejection of claim 6, the Examiner relied on the Otsu reference to teach this feature of the present invention. Claim 6 recites "an impedance storage device" for storage of the mutual impedance data for the object and the wave generation source. None of the cited references teaches this feature. The examiner cites Otsu as teaching this feature by arguing the feature is obvious in view of FIG. 45. Otsu discloses the use of two storage devices to store input data and output data used to store input data and output data. (Otsu FIG. 45) Nonetheless, FIG. 45 does not indicate any storage of the mutual impedance to these storage devices. The inference that the mutual impedance data is stored in a mutual impedance storage device is not suggested or taught in the Otsu reference no taught. Therefore, it is respectfully submitted that claim 6 is patentably distinguishable over the prior art.

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all

pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited. At a minimum, this Amendment should be entered at least for purposes of Appeal as it either clarifies and/or narrows the issues for consideration by the Board.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited and possibly concluded by the Examiner contacting the undersigned attorney for a telephone interview to discuss any such remaining issues. If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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Date: 8/16/5

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